

IN THE CLAIMS

1. (Currently Amended) A fluid control device used in a borehole, comprising:
a housing containing a first piston;
a magnetorheological fluid disposed within said housing;
a magnetic assembly capable of switchably creating a magnetic field which passes through said housing;
wherein blockage of the flow of magnetorheological fluid through said housing by a magnetic field, wherein said magnetic field acts substantially perpendicular to a pressure gradient and impedes movement of said piston.
2. (Original) The device of claim 1, wherein total blockage of said flow stops movement of said piston.
3. (Original) The device of Claim 1, wherein partial blockage of said flow slows movement of said piston.
4. (Original) The device of Claim 1, wherein said magnetic assembly comprises a permanent magnet and an electromagnet and the un-powered state of said magnetic assembly generates a magnetic field.
5. (Original) The device of claim 1, wherein said magnetic assembly comprises an electromagnet and the powered state of said magnetic assembly generates a magnetic field.
6. (Original) The device of Claim 1, wherein said piston is held immobile by an unpowered magnetic assembly, providing a safety lock.
7. (Original) The device of Claim 1, wherein movement of said piston is controlled to provide a time-delay device.

8. (Currently Amended) A system for drilling or producing oil and gas, comprising:
a string of tools deployed in a borehole;
a housing containing a first piston;
a magnetorheological fluid disposed within said housing;
a magnetic assembly capable of switchably creating a magnetic field which passes through said housing;
wherein blockage of the flow of magnetorheological fluid through said housing by a magnetic field, wherein said magnetic field acts substantially perpendicular to a pressure gradient and impedes movement of said piston.
9. (Original) The system of claim 8, wherein total blockage of said flow stops movement of said piston.
10. (Original) The system of Claim 8, wherein partial blockage of said flow slows movement of said piston.
11. (Original) The system of Claim 8, wherein said magnetic assembly comprises a permanent magnet and an electromagnet and the un-powered state of said magnetic assembly generates a magnetic field.
12. (Original) The system of claim 8, wherein said magnetic assembly comprises an electromagnet and the powered state of said magnetic assembly generates a magnetic field.
13. (Original) The system of claim 8, wherein said piston is held immobile by an unpowered magnetic assembly, providing a safety lock.

14. (Currently Amended) A method of blocking or delaying a downhole event, comprising the steps of:

connecting a housing containing a piston in such a manner that completion of said downhole event is dependent on said piston arriving at a given location within said housing;
disposing a magnetorheological fluid within said housing in such a manner that said piston is blocked from said given location;
creating a magnetic field through at least a portion of said magnetorheological fluid, wherein said magnetic field acts substantially perpendicular to a pressure gradient.

15. (Original) The method of claim 14, wherein said creating step creates a magnetic field of sufficient magnitude to prevent movement of said piston through said magnetorheological fluid.

16. (Currently Amended) ~~The~~A method of ~~claim 14~~blocking or delaying a downhole event, comprising the steps of:

connecting a housing containing a piston in such a manner that completion of said downhole event is dependent on said piston arriving at a given location within said housing;
disposing a magnetorheological fluid within said housing in such a manner that said piston is blocked from said given location;
creating a magnetic field through at least a portion of said magnetorheological fluid,
wherein said creating step creates a magnetic field of sufficient magnitude to slow, but not stop, movement of said piston through said magnetorheological fluid.

17-55. (Withdrawn)

56. (New) A system for drilling or producing oil and gas, comprising:
a string of tools deployed in a borehole;
a housing containing a first piston;
a magnetorheological fluid disposed within said housing;
a magnetic assembly having a working gap having a first magnetic field strength and a reluctance gap having a second magnetic field strength capable of switchably ~~creating a magnetic field which passes~~ changing said first magnetic field strength and said second magnetic field strength passing through said housing; wherein blockage of the flow of magnetorheological fluid through said housing by a said first magnetic field strength impedes movement of said piston.
57. (New) The system of claim 56, wherein total blockage of said flow stops movement of said piston.
58. (New) The system of claim 56, wherein partial blockage of said flow slows movement of said piston.
59. (New) The system of claim 56, wherein said magnetic assembly comprises a permanent magnet and an electromagnet and the un-powered state of said magnetic assembly generates a said first magnetic field strength and said second magnetic field strength.
60. (New) The system of claim 56, wherein said magnetic assembly comprises an electromagnet and the powered state of said magnetic assembly generates a said first magnetic field strength and said second magnetic field strength.
61. (New) The system of claim 56, wherein said piston is held immobile by an unpowered magnetic assembly, providing a safety lock.

62. (New) A fluid control device used in a borehole, comprising:
a housing containing a first piston;
a magnetorheological fluid disposed within said housing;
a magnetic assembly capable of switchably creating a magnetic field which passes through said housing;
wherein said magnetic field is switchably created by a short circuit or an open circuit; and
wherein blockage of the flow of magnetorheological fluid through said housing by a magnetic field impedes movement of said piston.
63. (New) The device of claim 62, wherein said open circuit is created by a hydraulic pressure.
64. (New) The device of claim 62, wherein said open circuit is created by a mechanical force.
65. (New) The device of claim 62, wherein said short circuit is created by a hydraulic pressure.
66. (New) The device of claim 62, wherein said short circuit is created by a mechanical force.
67. (New) The device of claim 62, wherein total blockage of said flow stops movement of said piston.
68. (New) The device of claim 62, wherein partial blockage of said flow slows movement of said piston.
69. (New) The device of claim 62, wherein said magnetic assembly comprises a permanent magnet and the un-powered state of said magnetic assembly generates a magnetic field.
70. (New) The device of claim 62, wherein said piston is held immobile by an unpowered magnetic assembly, providing a safety lock.

71. (New) The device of claim 62, wherein movement of said piston is controlled to provide a time-delay device.